Legacy/Non-NOAA Mission Data Product Sustainment

Kathryn Shontz
Acting Satellite Product Management Lead

NOAA Satellite Conference
Research to Operations Panel
Monday, July 17, 2017

Legacy/Non-NOAA Data Products

- **NESDIS provides operational satellite data products and services to serve the NOAA Line Office operational and research communities with the following legacy NOAA and partner non-NOAA satellite missions**

DMSP F16	MetOp-A	NOAA-15	JASON-2	GOES-W
DMSP F17	MetOp-B	NOAA-18	JASON-3	Himawari-8
DMSP F18	Sentinel-1	NOAA-19	CryoSat	Meteosat-8 (IODC)
COSMIC	SMOS	Aqua	RadarSat	Meteosat-9
GPM	SMAP	Terra	Megha-Tropiques	Meteosat-10

- **OSGS provides data product sustainment for non-NOAA and legacy satellites in support of NOAA Line Office user missions**

Non-NOAA/Legacy Satellite Product Sustainment

- **Currently, OSGS is supporting the following sustainment activities with Fiscal Year 2017 funds:**
  - Ocean Surface Winds from SAR – sustained with Sentinel-1 a/b
  - Automated SAR Oil Mapping Product – sustained with Sentinel-1 a/b
  - Blended Dvorak Technique Upgrade – sustained with GPM
  - Microwave Tropical Cyclone Surface Wind Analysis Upgrade- sustained with MetOp-B
  - Ocean Heat Content – sustained with JASON-3 & Sentinel-3
  - ScatSat Sensor Quality Risk Reduction

- **OSGS is reviewing FY 2018 sustainment funding requests for:**
  - Polar continuity with MetOp-C
  - Geostationary continuity with Himawari-8
    - *Note that quasi-operational H-8 data is made available to NWS through STAR and OSPO today*
  - Ocean Surface Winds from Scatterometry with ScatSat, ASCAT and OceanSat-3
  - Blended Sea Surface Temperature & Blended Dvorak Technique upgrades with Meteosat-8 over the Indian Ocean

Anticipated Sustainment Activities through 2020

OSGS developed a Satellite Product Continuity Plan, to estimate data product sustainment activities expected within the next 5 years

Non-NOAA/Legacy Mission	Launch Date	Products Sustained
Jason-3	*2016*	*Ocean Heat Content*
Jason-CS-a	*2020*	*Ocean Surface Winds, Automated Oil Spills*
Metop C	*2018*	*MetOp-B Continuity (Radiances, Atmospheric Winds, Clouds, Soundings, Ocean Surface Winds, Rainfall product suite, Soil Moisture, Radiative Budget)*
EPS-SG	*2021*	*JPSS-like Continuity (Radiances, Atmospheric Winds, Clouds, Soundings, Vegetation Products, Ocean Surface Winds, Rainfall product suite, Soil Moisture, Radiative Budget)*
GPM Core	*2014*	*Rainfall product suite*
Himawari-8	*2014*	*Cloud/Moisture Imagery, Atmospheric Winds, Sea Surface Temperature*
Himawari-9	*2016*	*Cloud/Moisture Imagery, Atmospheric Winds, Sea Surface Temperature*
Meteosat-8 (Indian Ocean)	*-2018*	*Sea Surface Temperature*
Meteosat Third Generation	*2020*	*Meteosat Continuity (Cloud/Moisture Imagery, Atmospheric Winds, Sea Surface Temperature)*
Oceansat-3	*2018*	*Ocean Surface Winds*
RCM-1/2/3	*2018*	*Ocean Surface Winds, Automated Oil Spills*
Sentinel-1 a/b	*2014/16*	*Ocean Surface Winds, Automated Oil Spills*
Sentinel-3 a/b	*2016/17*	*Ocean Heat Content*
ScatSat-1	*2016*	*Ocean Surface Winds, Soil Moisture*

Enterprise Algorithm Goals

- **Consolidated scientific approaches for all like-data products going forward will:**
  - Provide significant sustainment savings
  - Maintain product and verification consistency for users

Enterprise Observation Category	Observable Parameters
Sea Surface Temperature	Polar and geo Imagery SST, Microwave SST, SST Frontal, SST Anomaly, Currents and Blended SST, Coral Reefs
Surface Winds	Scatterometer winds, SAR Winds and Microwave Imager Winds
Clouds	Cloud Cover/Layers, Cloud Height, Cloud Mask, Cloud Optical Depth, Cloud Particle Size Distribution, Cloud Phase, Cloud Top Pressure, Cloud Top Temperature, Low Cloud/Fog
Atmospheric Winds	Cloud and Moisture-tracked winds (Derived Motion Winds, Polar Winds)
Tropical Cyclones	Microwave Tropical Cyclone Wind Analysis, Advanced Dvorak Technique, Ensemble Tropical Rainfall Potential (eTRaP), Tropical Cyclone Formation Probability
Convection	Lightning Detection, Stability Indices, Convective Initiation, Overshooting Top Detection, Tropopause Folding Turbulence Prediction *(Expected with GOES-16 instrumentation advances)*
Imagery	Automated Imagery Products (i.e. Arctic Composite Imagery, Global Mosaic…), Automated Oil Spill Mapping
Atmospheric Sounding and Hydrometeorological	Temperature Profile, Moisture Profile, Rainfall Rate, Snow Water Equivalent, Total Precipitable Water, Cloud Liquid Water, Rain Water Path, Ice Water Path, Snowfall Rate, Probability of Rainfall, Blended Rainfall, Blended TPW)
Ocean Heat	Ocean Heat Content, Sea Level Height Anomaly, Significant Wave Height
Snow, Ice and Hydrological	Snow Cover, Snow Depth, Ice Cover, Ice Concentration, Ice Surface Temperature, Ice Age/Thickness, Soil Moisture, Ice Motion, Flooding, River Ice Detection
Ocean Color	Ocean Color/Chlorophyll, Chlorophyll Anomaly, Chlorophyll Frontal Product
Fire, Aerosol and Volcanic Ash	Active Fires, Biomass Burning, Fire Radiative Power, Hot Spots, Smoke, Aerosol Optical Depth, Aerosol Detection, Aerosol Particle Size, Volcanic Ash Detection
Ozone and Trace Gas	Ozone Total Column, Ozone Nadir Profile, IR Ozone, CO, CO2, CH4, SO2, Blended Ozone
Surface and Radiative	Surface Reflectance, Albedo, Land Surface Emissivity, Land Surface Temperature, Surface Type, Surface Radiation (GSIP), Radiation Budget
Vegetation	Vegetation Indices, Vegetation Health, Green Vegetation Fraction, Evapotranspiration, Drought

Moving Forward

- **OSGS will employ enterprise product generation solutions for sustainment of satellite data products by:**
  - Investing in enterprise algorithms for consistency with the NOAA JPSS and GOES-R missions
  - Moving and consolidating all product generation into enterprise architecture systems
- **OSGS will apply available funds to sustain existing operational products in accordance with NESDIS priorities**